

Abstract of the Disclosure

An apparatus for controllably generating sparks is provided. The apparatus includes a spark generating device; at least two output stages connected to the spark generating device; means for charging energy storage devices in the output stages and at least partially isolating each of the energy storage devices from the energy storage devices of the other output stages; and, a logic circuit for selectively triggering the output stages to generate a spark. Each of the output stages preferably includes: (1) an energy storage device to store the energy; (2) a controlled switch for selectively discharging the energy storage device; and (3) a network for transferring the energy discharged by the energy storage device to the spark generating device. In accordance with one aspect of the invention, the logic circuit, which is connected to the controlled switches of the output stages, can be configured to fire the stages at different times, in different orders, and/or in different combinations to provide the spark generating device with output pulses having substantially any desired waveshape and energy level to thereby produce a spark having substantially any desired energy level and plume shape at the spark generating device to suit any application.